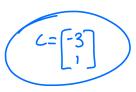
$$V = \begin{bmatrix} 5 & -5 \end{bmatrix}^{\mathsf{T}} \qquad g_1 = \begin{bmatrix} -1 \\ 2 \end{bmatrix} \qquad g_2 = \begin{bmatrix} 2 \\ 1 \end{bmatrix}$$

a.) Transform of V, C.

$$C_{K} = \frac{\langle V_{i} \otimes \kappa \rangle}{\langle \delta \kappa_{i} \otimes \kappa \rangle} \qquad C_{i} = \frac{(5(4) - 5(2))}{(-1(4) + 2(2))} = \left(\frac{-15}{5}\right) = ^{-3}$$

$$C_{2} = \frac{(5(2) - 5(1))}{(2(2) + 1(1))} = \left(\frac{5}{3}\right) = 1$$



b.) Discrete transform matrix,

$$6^T = \begin{bmatrix} -1 & 2 \\ 2 & 1 \end{bmatrix}$$

$$b = \begin{bmatrix} -1 & 2 \\ 2 & 1 \end{bmatrix} \qquad b^{T} = \begin{bmatrix} -1 & 2 \\ 2 & 1 \end{bmatrix} \qquad H = \begin{bmatrix} \frac{1}{2} & \frac{2}{3} \\ \frac{2}{3} & \frac{1}{3} \end{bmatrix} \qquad H = \begin{bmatrix} \frac{1}{2} & \frac{1}{2} \\ \frac{1}{2} & \frac{1}{3} \end{bmatrix} \qquad \begin{bmatrix} -6.2 & 0.4 \\ 0.4 & 0.2 \end{bmatrix}$$

$$\vec{a}_2 \cdot \vec{a}_2 = 5$$

$$= \begin{bmatrix} -6.2 & 6.4 \\ 0.4 & 0.2 \end{bmatrix} \begin{bmatrix} 5 \\ -5 \end{bmatrix} = \begin{bmatrix} \frac{5(-6.2) - 5(0.4)}{5(0.4) - 5(0.2)} \end{bmatrix} = \begin{bmatrix} -3 \\ 1 \end{bmatrix}$$



C.) Use inverse discrete transform to Find V from C V= HC or V=GC

$$V = \begin{bmatrix} -1 & 2 \\ 2 & 1 \end{bmatrix} \begin{bmatrix} -3 \\ 1 \end{bmatrix} = \begin{bmatrix} 3+2 \\ -6+1 \end{bmatrix} = \begin{bmatrix} 5 \\ -5 \end{bmatrix}$$



(.لے V as an expansion 91,92

$$V = -3\begin{bmatrix} -1\\2 \end{bmatrix} + 1\begin{bmatrix} 2\\1 \end{bmatrix}$$